

## REMARKS

Applicants thank Examiner Mitchell for the courtesies extended to Applicants' representative at the February 11 interview. At that interview, the Examiner indicated that Applicants' arguments and proposed amendments would overcome the 35 U.S.C. §112, second paragraph rejections and the rejection of claims 15 and 16 under 35 U.S.C. §103(a). She indicated she would consider the remaining amendments and arguments of this Amendment. Further, the interview is summarized in the PTO Interview Summary. Applicants' separate record of any further substance of the interview is incorporated into the following remarks.

Claims 1 to 35 and 43 to 66 are pending.

Non-elected claims 36 to 43 have been cancelled. Claims 1 and 44 have been amended to "in-well" "wireless communications" (claim 1) and to an "in-well" "transmitter" (claim 44). Support for these amendments is found in specification paragraphs [0031] to [0035] and FIG. 4, *inter alia*. Claim 66 has been amended to the three dimensional transect of claim 8.

### **I. Objections**

Paragraphs [0033] and [0045] have been amended to address the objections to the specification.

### **II. 35 U.S.C. §112, second paragraph Rejections**

Claims 57 and 64 to 65 were rejected under 35 U.S.C. §112, second paragraph. Claim 57 has been amended to overcome the rejection. However, the rejection of claims 64 to 65 is traversed. Claims 64 to 65 do not recite "plurality of wells." Claims 64 to 65 in lines 1 to 2, recite "a respective plurality of wells." The term "a respective plurality of wells" is a new claim element of claims 64 and 65 not requiring antecedent basis in claim 44. The rejection of claims 57 and 64 to 65 were rejected under 35 U.S.C. §112, second paragraph should be withdrawn.

### III. 35 U.S.C. §102(b) Rejection

Claims 1, 17 to 19 and 44 were rejected under 35 U.S.C. §102(b) over the Corps of Engineers paper(s). Claim 1 has been amended to claim “transmitting [a sensed] signal by a wireless communication to a remote monitor.” Claims 17 to 19 depend from claim 1. Claim 44 has been amended to claim “a transmitter... to wirelessly transmit a signal... to a remote monitor.” The Corps of Engineers paper(s) does not teach or suggest “transmitting [a sensed] signal by a wireless communication to a remote monitor” or “a transmitter... to wirelessly transmit a signal... to a remote monitor.” The rejection of claims 1, 17 to 19 and 44 under 35 U.S.C. §102(b) over the Corps of Engineers paper(s) should be withdrawn.

### IV. 35 U.S.C. §103(a) Rejections

Claims 1 to 14, 17 to 35 and 44 to 66 were rejected under 35 U.S.C. §103(a) over the PRB paper(s) and Misquitta; claims 15 to 16 were rejected under 35 U.S.C. §103(a) over the PRB paper(s), Misquitta and Salvo et. al.; claims 2 to 14, 20 to 35 and 45 to 66 were rejected under 35 U.S.C. §103(a) over the Corps of Engineers paper(s) and Misquitta; and claims 15 to 16 were rejected under 35 U.S.C. §103(a) over the Corps of Engineers paper(s), Misquitta and Salvo et. al. The rejections should be withdrawn for the following reasons.

#### A. Improper Combinations of References

The rejections are based on an improper combination of references.

The PRB paper(s) and the Corps of Engineers paper(s) relate to a “Permeable Reactive Barrier” (PRB) method. A PRB method is a passive method that depend upon “natural groundwater flow” for effectiveness. Applicants’ specification paragraph [0004] points out:

A PRB is designed to provide a set residence time for decontamination of the contaminated plume. The PRB design is determined by the concentration of contaminants, *the natural groundwater flow* and the degradation rate for the contaminants in the presence of the PRB reactive material. A wide variety of chlorinated hydrocarbons, including

chlorinated ethenes such as trichloroethene (TCE) and tetrachloroethene (PCE) and their products, dichloroethene (DCE) and vinyl chloride (VC), are effectively treated by this method, often at a significant cost savings when compared to conventional pump-and-treat alternatives. (Emphasis added.)

The Misquitta reference relates to a “Pump-and-Treat” groundwater recovery system. In contrast to a passive PRB method, a “Pump and Treat” disrupts natural groundwater flow by diverting ground water to the surface for treatment. A reference that teaches a disruptive pump and treat method is not reasonably pertinent to a passive, natural flow method. The references are not analogous art. See *In re Clay*, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992). One skilled in the art would not have been led to combine a passive, natural flow treatment (PRB) teaching with a disruptive “Pump and Treat” method teaching. the methods are from non-analogous, in fact contradictory art. See *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992).

Second, to support a rejection based on a combination of references, “[t]he PTO “must not only assure that... requisite findings are made, based on evidence of record, but must also *explain the reasoning by which the findings are deemed to support the agency's conclusion*” (emphasis added). *In re Lee*, 61 USPQ 2d 1430, 1434, 277 F.3d 1338, \_\_\_\_\_ (Fed. Cir. 2002). Why would one skilled in the art be led to combine teachings of methods and systems of in-situ, passive aquifer treatments that must acquire stable samples (the PRB paper(s) and the Corps of Engineers paper(s)) with a disruptive “Pump and Treat” method and system (Misquitta). The Office Action fails to explain the reasoning of why one skilled in the PRB art would have been led to combine a disruptive “Pump and Treat” teaching.

The rejections under 35 U.S.C. §103(a) over the PRB paper(s) and Misquitta; over the PRB paper(s), Misquitta and Salvo et. al.; over the Corps of Engineers paper(s) and Misquitta; and over the Corps of Engineers paper(s), Misquitta and Salvo et. al. should be withdrawn.

**B. No *prima facie* Case.**

Further even improperly combined, the references do not establish a *prima facie*

case of obviousness of “in-well” “wireless communications” claims 1 to 43 or of “a transmitter associated with the sensor in well to wirelessly transmit a signal” claims 44 to 65. The Office Action at page 7 states that “A transmitter... and the method of monitoring and transmitting” is [sic] taught in Misquitta in col. 6 lines 47-60 and col. 7 lines 7-21.” Applicants have carefully reviewed Misquitta. While Misquitta discloses a monitor that transmits a signal, the signal is transmitted by wire not “wirelessly.” See Misquitta col. 8, lines 41 to 50.

"A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art...." *In re Rijckaert*, 28 USPQ2d 1955, 1956 (Fed. Cir. 1992). The PRB paper(s), the Corps of Engineers paper(s), Misquitta and Salvo et. al. do not teach or suggest “in-well” “wireless communications” (claims 1 to 43) or “a transmitter associated with the sensor in well to wirelessly transmit a signal” (claims 44 to 65). "If examination... does not produce a prima facie case of unpatentability, then without more the applicant is entitled to grant of the patent." *In re Oetiker*, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). "When the reference cited by the examiner fail to establish a prima facie case of obviousness, the rejection is improper and will be overturned." *In re Deuel*, 34 USPQ2d 1210, 1214 (Fed. Cir. 1995).

The references do not establish a prima facie of obviousness of claims 1 to 65. The rejections under 35 U.S.C. 103 should be withdrawn.

**C. Salvo Is Not a Correct 35 U.S.C. §102(e) Reference to Support a 35 U.S.C. §103(a) Rejection.**

MPEP 706.02(k) confirms that “effective November 29, 1999, subject matter which was prior art under former 35 U.S.C. 103 via 35 U.S.C. 102(e) is now disqualified as prior art against the claimed invention if that subject matter and the claimed invention “were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.” the Salvo patent is assigned to General Electric Company. At the time of filing of the present application, the inventors were under an obligation to assign to the same General Electric Company as evidenced by the

recorded assignment in this case. Hence, the Salvo patent is not a proper 35 U.S.C. §102(e) reference and cannot be used in a 35 U.S.C. §103(a) rejection. Hence for this additional reason, the rejections of claims 15 to 16 under 35 U.S.C. §103(a) over the PRB paper(s), Misquitta and Salvo et. al. and over the Corps of Engineers Paper(s), Misquitta and Salvo et. al. should be withdrawn.

In view of the foregoing amendments and remarks, it is respectfully submitted that claims 1 to 35 and 43 to 66 are allowable. Reconsideration and allowance are requested.

Should the Examiner believe that any further action is necessary in order to place this application in condition for allowance, she is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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## VERSION WITH MARKINGS TO SHOW CHANGES MADE

## IN THE SPECIFICATION:

Please rewrite page 7, paragraph [0033] as follows:

[0034] The sensing unit 28 includes a communications unit, which is electronically coupled to the sensing unit 28 and is capable of transmitting data to a data collection center. The signals may be communicated, for example, from a well transceiver to the data collection system by at least one hardwired communication connection, such as, but not limited to, an electrical conductor, wireless communication connections, such as, but not limited to, radio signals, satellite communications and combinations of wireless and hardwired connections. The communications unit also typically comprises an antenna that is connected to the transceiver, unless the communications unit is hardwired. The data collection center comprises a center communications unit that is capable of receiving signals from the transceiver and a control that analyzes the signals and generates information on groundwater characteristics. The control of the data collection system typically includes a "user friendly" data acquisition software package that transforms information into easy-to-read formats.

Rewrite page 11, paragraph [0045]:

[0045] TABLE 2 shows multiple daily sampling events. The DAY column indicates days after PRB installation. Accuracy of the in-well (in situ) sampling was confirmed by controlled laboratory measurements. In TABLE 2, the high dissolved oxygen (DO) values and the more positive oxidation-reduction potential (ORP) values measured by the low-flow purge method were in error, as a groundwater cannot be highly reducing ( $< -100$  mv ORP) and at the same time be characterized by such high concentrations of dissolved oxygen ( $\sim 3.5$  mg/L). This type of contaminated data is not uncommon when low-flow purge methods are used. The EXAMPLE illustrates the sampling accuracy advantage of in-well measurements according to the invention.

## IN THE CLAIMS:

Please rewrite claims 1, 44, 57 and 66 as follows:

1. (amended) A method, comprising:

conducting a permeable-reactive barrier (PRB) treatment of a contaminated aqueous medium; [and]

in-well monitoring by sensing effectiveness of the PRB treatment to generate a signal representing a characteristic of the sensed effectiveness; and

in-well transmitting the signal by a wireless communication to a remote collector or monitor.

44. (amended) A system, comprising:

a PRB zone to treat a contaminated groundwater;

an in-well sensor located within a gradient of the contaminated groundwater or within the PRB zone to sense a characteristic of the groundwater; and

a transmitter associated with the sensor in well to wirelessly transmit a signal concerning the characteristic.

57. (amended) The system of claim [57] 56, further comprising a collector to receive the signal from the transmitter.

66. (twice amended) A system, comprising:

a PRB zone to treat a contaminated groundwater; and

a sensor located in a monitoring well substantially along a PRB zone transect of flow of the contaminated groundwater from an up-gradient location, across the PRB zone to a down-gradient location;

wherein the transect of flow is defined by a  $\pm 6$  feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is  $\pm 1$  feet of an open screen interval mid point of each well.